Digital Financial Literacy Matters

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Abstract

This paper investigates the level and socio-demographic determinants of digital financial literacy among adults in 15 European countries. It draws on data from the most recent (2023) survey conducted by the International Network of Financial Education (INFE) of the Organization for Economic Development (OECD), which includes large, representative national samples and standardized data collection. A series of statistical analyses was conducted to assess the extent to which adults using digital financial products and services in the countries observed meet the minimum required level of digital financial literacy and whether digital financial literacy scores vary significantly across groups defined by gender, age, educational attainment, income level, and size of settlement.

The results indicate that the overall level of digital financial literacy is relatively low across the countries examined, is unevenly distributed and falls below the OECD average. Of the variables analyzed, educational attainment and income level showed a statistically significant impact on digital financial literacy scores, with moderate effect sizes. Gender, age, and size of settlement did not show a significant influence. Hungary ranks in the lower half of the observed countries. The findings underscore the need for continued efforts to improve digital financial literacy across Europe.

Keywords: digitalization; financial literacy; digital literacy; digital financial literacy; FinTech; statistical methods

JEL classification: G53

Introduction

Digitalization is a key trend reshaping both the present and the future. It brings about fundamental transformations across all areas of economic and social life, from production processes and supply chains to sales, marketing, transportation, consumption, public administration, communication, healthcare, education, and even the arts and leisure activities.

The digitalization of finance is currently a highly relevant and widely discussed topic. This is unsurprising, given that digital transformation is reshaping the entire financial architecture — including the institutions, policies, regulations, and practices that underpin the financial system. As a result, customers are expected to adapt to this evolving new environment and develop the necessary skills and competencies to successfully navigate the digital financial landscape and achieve their financial objectives (Zaika, 2024).

Digitalization accelerated following the global financial crisis and has unfolded in three major phases up to the present day:

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1. **Pre-pandemic phase (circa 2008–2019):**
   This period was characterized by the rise of Financial Technology (FinTech) startups, emerging largely as a response to the erosion of trust in traditional banks after the global financial crisis. These newcomers embraced technology to deliver enhanced digital customer experiences and began to gain a foothold in the financial services sector (Ross et al., 2023).
2. **Pandemic phase (2020–2022):**
   During the COVID-19 lockdowns, digitalization surged as institutions rapidly developed online platforms and Information Technology (IT) infrastructure. The primary objective was to ensure operational continuity and deliver a seamless, digital-first customer experience despite physical restrictions (Moden and Neufeld, 2020).
3. **Post-pandemic phase (2023–present):**
   With the immediate pandemic pressures of the pandemic easing, the FinTech landscape has shifted towards greater collaboration and ecosystem-building. Partnerships between traditional financial institutions and FinTech companies have become increasingly common, supported by regulatory frameworks which encourage data-sharing and foster integrated service platforms (Thompsett, 2024).
   Digitalization is rapidly transforming the financial sector, with digital financial services becoming increasingly widespread — and in many cases, establishing themselves as the new norm**.** Consumers are now more likely to purchase goods and services online and to manage their finances through digital platforms. Between 2014 and 2021, the global share of individuals who made or received digital payment rose significantly — from 44% to 64%. Among countries in the Organization for Economic Co-operation and Development (OECD), this figure reached an impressive 96% (Demirgüç-Kunt et al., 2022, pp. 53–76). Since then, the pace of digital adoption has continued to accelerate, further reinforcing the shift toward a fully digital financial ecosystem.

Digital financial services offer numerous benefits, but they also present significant challenges**.** On the one hand, these services are widely recognized for being convenient, fast, cost-effective, and user-friendly. They enhance accessibility and promote financial inclusion, offer innovative financial solutions, and — when properly implemented — can offer a secure and effective means of fraud prevention.

On the other hand, digital financial services raise serious concerns related to security, data privacy, and regulatory compliance. They also entail technological risks, increase the potential for overspending, and may contribute to digital financial exclusion — particularly among vulnerable groups lacking access to digital infrastructure or the necessary digital skills. Crucially, these services require a certain level of digital financial literacy, without which users may struggle to navigate the digital financial environment safely and effectively.

In today's increasingly digital financial landscape, digital financial literacy has become an essential competency. As such, it is not merely a blend of traditional literacies, but a distinct and evolving skill set in its own right. Low levels of digital financial literacy can adversely affect not only individual financial well-being but also the stability of the financial system and, ultimately, societal resilience. Conversely, improving digital financial literacy — alongside robust regulatory frameworks and consumer protection mechanisms — can empower individuals to protect themselves online and make informed use of FinTech tools. This, in turn, supports the development of a secure and inclusive financial sector and contributes to broader societal well-being.

Defining Digital Financial Literacy

The concept of digital financial literacy has its origins in three foundational domains: *literacy*, *financial literacy*, and *digital literacy*. It draws upon and integrates key elements from each of these fields, while also incorporating unique features that reflect the specific characteristics, complexities, and risks associated with digital financial products and services.

- **Literacy**

While various definitions of literacy have been proposed by both researchers and practitioners, this paper adopts the definition provided by one of the internationally recognized organizations, particularly the OECD.

According to the OECD (2024, pp. 58–59)**,** *literacy* is defined as:

> "the ability to understand, evaluate, use and engage with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential. […] This definition does not involve either comprehending or producing spoken language or producing text (writing)."

The OECD further classifies literacy into **six proficiency levels**: Level 1 to Level 5, and below Level 1.

- At Level 1, individuals are able to understand short texts and structured lists where the required information is explicitly stated. They can locate specific details and make simple inferences.
- Those below Level 1 can comprehend, at most, short and basic sentences.
- At the upper end, individuals at Level 4 or 5 can interpret complex, extended texts, identify implicit meanings, and apply prior knowledge to perform sophisticated tasks.
- Levels 2 and 3 represent intermediate literacy skills and are also described in detail in the OECD framework.

This comprehensive structure emphasizes the nuanced range of literacy skills necessary for navigating modern information environments**,** including — but not limited to — financial and digital domains.

- **Financial Literacy**

In this paper, the definition of *financial literacy* is based on the widely accepted framework developed by the International Network of Financial Education (INFE) of the OECD:

> "Financial literacy is a combination of financial awareness, knowledge, skills, attitudes, and behaviors necessary to make sound financial decisions and ultimately achieve financial well-being." (OECD/INFE, 2023, p. 13)

Financial literacy enables individuals to make informed financial decisions and exercise greater control over their personal finances. It enables them to critically assess financial products and services, understand associated risks and opportunities, and navigate the financial system with increased confidence.

Beyond its informational value, financial literacy serves a protective function. It helps individuals avoid financial fraud, resist manipulative marketing tactics, and build the confidence needed to explore and adopt new financial tools and technologies. Importantly, it also fosters positive financial behaviors, such as saving and investing, which are essential for managing short-term financial volatility and achieving long-term financial goals.

As digital financial services become increasingly prevalent, financial literacy plays an even more pivotal role in ensuring that consumers can actively and safely participate in the evolving financial landscape.

- **Digital Literacy**

This paper adopts the definition of *digital literacy* provided by UNESCO (2018):

"Digital literacy refers to the ability to access, understand, communicate, and create information through digital devices and technologies."

Digital literacy encompasses a broad set of competencies that enable individuals to engage meaningfully and safely in a digital society. According to UNESCO, this includes both generic Information and Communication Technology (ICT) skills—such as using search engines, word processing applications, spreadsheets, or online communication platforms—and more advanced ICT skills, such as programming, coding, or managing complex digital systems.

While basic digital literacy equips individuals to operate in everyday digital environments (e.g. sending emails, conducting online searches, or participating in social media), more advanced levels of digital competency are becoming increasingly essential in a knowledge-driven economy. These skills are also essential for navigating digital services — particularly in the context of FinTech, where users are expected to navigate sophisticated platforms, manage sensitive data, and make secure online transactions.

Digital literacy, therefore, forms a foundational pillar of digital financial literacy. It not only enables consumers to access digital financial tools but also empowers them to do so in a safe, critical, and informed manner.

- **Digital Financial Literacy**

According to the OECD INFE (2023, p. 7), *digital financial literacy* is defined as:

"a combination of knowledge, skills, attitudes, and behaviors that enable individuals to be aware of and safely use digital financial services and technologies, with the ultimate goal of enhancing their financial well-being."

Digital financial literacy is recognized as a distinct subset of overall financial literacy, reflecting the unique challenges and opportunities presented by the digitalization of financial services. It encompasses not only a sound understanding of traditional financial concepts but also the ability to navigate, evaluate, and securely interact with digital platforms, tools, and innovations within the financial ecosystem.

Literature Review

The academic literature specifically addressing digital financial literacy, as defined above, remains relatively limited, primarily due to the recent emergence of the concept alongside the rise of FinTech. In contrast, financial literacy has been the subject of extensive research over a longer period, followed more recently by a growing body of research on digital literacy. These foundational areas are therefore considered well-established and widely recognized.

FinTech — defined as the provision of financial services to consumers through digital devices utilizing software, applications, and platforms — has ushered in a new era marked by significant opportunities, particularly in the realm of financial inclusion. This development initially led to the implementation of practical solutions, which have since been complemented by an expanding body of methodological and empirical research.

Regarding practical measures, the first Global Findex database — a worldwide survey tracking country-level financial inclusion — was launched in 2010. In the same year, the Group of Twenty (G20) introduced the Financial Inclusion Action Plan (FIAP) with the objective of

expanding access to financial services. To support its implementation, G20 also established the Global Partnership for Financial Inclusion (GPFI). The FIAP was revised in 2014 to reflect emerging developments, including the growing significance of FinTech. As part of this revision, a commitment was made to implement the G20 Principles for Innovative Financial Inclusion, based on a shared vision of universal access to financial services (BIS, World Bank, 2016). In 2016, G20 leaders formally acknowledged the role of digital financial literacy in harnessing the benefits of FinTech and endorsed the High-Level Principles for Digital Financial Inclusion. Notably, Principle 6 emphasized the need to 'Strengthen Digital and Financial Literacy and Awareness' (GPFI, 2016). The Findex database was updated in 2021, revealing a substantial increase in global financial inclusion over the previous decade (Demirgüç-Kunt, Klapper, Singer & Ansar, 2022).

With regard to collecting and providing systematic data, the International Network on Financial Education (INFE) of the OECD expanded its regular financial literacy survey in 2022 to assess both the extent to which consumers use digital financial services and their level of digital financial literacy. Accordingly, the survey's Toolkit was revised to incorporate these new dimensions (OECD/INFE, 2023).

The significance of digital financial literacy in the digital era has been highlighted by researchers from the Asian Development Bank Institute — Morgan, Huang, and Trinh — who emphasized the need for a clear conceptual framework. Building on previous efforts, they proposed a formal definition of digital financial literacy and called for the development and implementation of assessment and capacity-building tools, with particular attention to vulnerable population groups. They identified four key dimensions of digital financial literacy: (1) knowledge of digital financial products and services, (2) awareness of digital financial risks, (3) understanding how to manage and mitigate these risks, and (4) knowledge of consumer rights and redress mechanisms (Morgan, Huang & Trinh, 2019).

Lyons and Kass-Hanna (2021) conducted a comprehensive review and evaluation of methodological approaches used to define, measure, and analyze (a) financial literacy, (b) digital literacy, and (c) digital financial literacy. In addition, they introduced recent methodologies for constructing, testing, weighting, and standardizing multidimensional indices of digital financial literacy, with the aim of advancing empirical research in this evolving field.

A bibliometric analysis of digital financial literacy research was conducted by Yadav and Banerji (2023), drawing on data from the Scopus and Web of Science databases for the period 2014 to 2022. Using a web-based tool, they found that, as an interdisciplinary field, the thematic focus of digital finance research has evolved over time. Early studies primarily concentrated on socioeconomic and demographic variables; however, more recent research has broadened to encompass factors such as behavioral influences, promotional strategies, and other determinants affecting digital financial literacy.

Koskelainen, Kalmi, Scornavacca, and Vartiainen (2023) conducted a literature review aimed at exploring how digitalization influences individuals' financial literacy and financial capability. Their analysis revealed that research situated at the intersection of finance and digitalization predominantly centers on three thematic areas: FinTech, financial behavior in digital environments, and behavioral interventions. Based on these insights, they proposed a conceptual framework illustrating how these themes shape the knowledge, skills, and tools associated with traditional financial literacy and financial capability.

An increasing number of studies have specifically investigated digital financial literacy across various countries. While not exhaustive, notable examples include: Shen, Hu, and Hueng (2018), who examined the impact of financial literacy, digital financial product usage, and internet access on financial inclusion in China; Choung, Chatterjee, and Pak (2023), who explored the

relationship between digital financial literacy and financial well-being among Korean adults; Prasad, Meghwal, and Dayama (2018), who assessed the level of digital financial literacy in Indian households; and Schuhen et al. (2022), who reported on the digital financial literacy of adults in Germany.

Despite the significant progress made by leading international organizations and researchers, there remains substantial scope for further exploration and deeper understanding in the realm of digital financial literacy.

Research Objectives, Questions and Hypotheses

Having reviewed the conceptualization and significance of digital financial literacy, as well as the existing literature on the topic, it becomes evident that further investigation through quantitative research is warranted. This study, therefore, aims to examine digital financial literacy among the adult population in Europe and to analyze the factors influencing it using a comparative approach.

- **Research Objectives**
  1. To assess the level of digital financial literacy among the adult population in Europe.
  2. To explore cross-country variations in the level of digital financial literacy across Europe.
  3. To identify and analyze the socio-demographic factors that influence digital financial literacy.
- **Research Questions**
  1. What is the current level of digital financial literacy among the adult population in Europe?
  2. Are there significant differences in digital financial literacy levels among various European countries?
  3. Which socio-demographic characteristics (e.g., gender, age, educational attainment, income level) influence digital financial literacy and to what extent?
- **Hypotheses**
  - **H1:** The level of digital financial literacy among individuals is relatively low in the selected European countries and does not meet the requirements for the safe and effective use of digital financial products and services.
  - **H2:** Digital financial literacy is significantly influenced by key socio-demographic factors, including gender, age, educational attainment, income level, and size of settlement in the selected European countries.
    - **H2a:** There is a significant difference in digital financial literacy between men and women.
    - **H2b:** Younger individuals demonstrate higher levels of digital financial literacy compared to older age groups.
    - **H2c:** Individuals with higher levels of formal education have significantly greater digital financial literacy than those with lower educational attainment.
    - **H2d:** Higher income levels are positively associated with digital financial literacy.
    - **H2e:** Individuals living in larger settlements exhibit higher digital financial literacy compared to those living in smaller ones.

Methodology

- **Research Design**

This study applies a quantitative research design to assess the level of digital financial literacy among adults in the selected European countries. The research also aims to compare differences across countries and to identify key socio-demographic factors influencing digital financial literacy.

- **Data Source**

The analysis is based on secondary data obtained from the OECD/INFE 2023 International Survey on Adult Financial Literacy (OECD/INFE, 2023). This dataset is internationally recognized as the most up-to-date, reliable and comprehensive source of comparable data on financial literacy. For the first time, the 2023 wave of surveys includes a section dedicated to digital financial literacy, allowing for an in-depth investigation of this emerging topic.

The survey was conducted in 39 countries and economies, including 20 OECD member states (among them Hungary) and 8 G20 countries, with a total sample of 68,826 adult respondents aged 18–79. Data were collected through nationally representative surveys carried out by the relevant authorities in each participating country. The measurement framework is based on the OECD/INFE Toolkit, which was revised and endorsed in 2022.

- **Country Selection**

This study focuses on European countries for which complete and comparable data on digital financial literacy are available from the OECD/INFE 2023 International Survey. A total of **15 European countries** were included in the final sample: Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Romania and Sweden**.**

To provide a broader comparative perspective, the OECD average reported in the dataset was also included. This benchmark serves as a reference point for evaluating the relative performance of the European countries.

- **Variables and Measurement**

The primary dependent variable is the digital financial literacy score, which comprises multiple items that capture knowledge, awareness of risks, risk management, and understanding of consumer rights in digital financial contexts.

Independent variables include:

- Gender,
- Age group,
- Educational attainment,
- Income level,
- Size of settlement.

These variables were selected based on availability and relevance within the OECD/INFE dataset.

- **Statistical Analysis Plan**

To address the research objectives and test the proposed hypotheses, the following statistical analyses were conducted:

  - Descriptive Statistics
  - Analysis Based on Proportional Indicators
  - Correlation Analysis Between Digital Financial Literacy and Selected Socio-Demographic Factors
  - Analysis of Variance (ANOVA)

- Measures of Association

- **Software**
  All statistical analyses were conducted using IBM SPSS.

Results

Descriptive Statistics – Digital Financial Literacy

To test Hypothesis 1 (H1), which posits that the level of digital financial literacy among customers using digital financial services is relatively low and insufficient in the selected European countries, a descriptive statistical analysis was conducted based on data from the OECD/INFE 2023 International Survey on Adult Financial Literacy.

The analysis covers 15 European countries and focuses on the digital financial literacy scores of the adult population, expressed on a scale of 0 to 100. A benchmark score of 70 points is considered the minimum adequate level of digital financial literacy, based on OECD guidelines and international best practices.

Table 1 presents the digital financial literacy scores across the European countries. For comparative purposes, traditional financial literacy scores are also included, along with the difference between the two measures.

Table 1: Digital and Traditional Financial Literacy Scores of Adults across 15 European Countries
Source: Author's calculations based on data from OECD (2023)

No.	Country or Economy	Digital Financial Literacy Score (out of 100) across all adults (1)	Traditional Financial Literacy Score (out of 100) across all adults (2)	Difference between Traditional and Digital Financial Literacy Scores (2-1)
1	Croatia	49	62	13
2	Cyprus	44	56	12
3	Estonia	64	67	3
4	Finland	61	65	4
5	France	62	62	0
6	Germany	64	76	12
7	Greece	54	61	7
8	Hungary	48	58	10
9	Latvia	46	59	13
10	Lithuania	45	56	11
11	Luxembourg	59	68	9
12	The Netherlands	56	64	8
13	Poland	50	62	12
14	Romania	44	54	10
15	Sweden	52	66	14
	Mean	**53**	**62**	**9**
	Median	**52**	**62**	**10**

	Minimum	**44**	**54**	**10**
	Maximum	**64**	**76**	**12**
	Standard Deviation	**7.2**	**5.5**	**4.0**
	OECD Average	**55**	**63**	**8**

The average digital financial literacy score (mean) across the 15 European countries is **53** (out of 100), which falls significantly below the target threshold of 70.

The median score is 52, reinforcing the view that more than half of the adult population in the sample does not reach the minimum expected level of digital financial awareness.

The lowest observed score **is** 44 (recorded in Cyprus and Romania), while the highest score is 64 (recorded in Estonia and Germany), still falling short of the benchmark.

For comparison, the average traditional financial literacy score (mean) is 62, which is 9 points higher than the average digital financial literacy score. This gap illustrates a substantial difference in literacy levels between traditional and digital financial contexts.

Hungary scores below the sample average in both traditional and digital financial literacy.

Furthermore, data show that the selected European countries lag behind the OECD average. Their disadvantage is slightly greater in digital financial literacy (−2 points compared to the OECD average) than in traditional financial literacy (−1 point).

These findings support Hypothesis 1 (H1), as they demonstrate that the current level of digital financial literacy among adults in the selected European countries is relatively low and insufficient, particularly when measured against the 70-point benchmark.

The results also highlight considerable variation across countries, suggesting that factors such as national education systems, digital infrastructure, and financial inclusion policies may influence literacy levels.

- **Analysis Based on Proportional Indicators**

This section examines the relationship between digital financial literacy and the use of digital financial services across the selected European countries, focusing on *three key indicators*:

- Proportion of adults reaching the minimum digital financial literacy score (≥70/100 points)
- Proportion of adults who manage financial products and services online
- Proportion of online financial service users who reach the minimum digital financial literacy score (≥70/100 points)

Table 2: *Adequate Digital Financial Literacy and Digital Service Use*
Source: *Author's calculations based on data from OECD INFE 2023*

No.	**Country or Economy**	**Minimum Digital Financial Literacy (at least 70 points out of 100 points) across all Adults (percent)**	**Adults who Manage Financial Products and Services Online (percent)**	**Adults who Score the Minimum Target Digital Financial Literacy Score, out of those who Manage Financial Products and Services Online (percent)**

1	Croatia	21.8	24.3	32.2
2	Cyprus	10.6	29.0	11.6
3	Estonia	51.5	n/a	n/a
4	Finland	46.4	61.9	49.1
5	France	49.6	56.3	53.5
6	Germany	52.5	62.8	61.5
7	Greece	38.0	15.3	65.1
8	Hungary	16.2	29.7	22.4
9	Latvia	16.3	35.8	27.9
10	Lithuania	15.8	51.4	21.7
11	Luxembourg	42.6	76.4	44.3
12	The Netherlands	36.0	77.8	41.0
13	Poland	22.7	56.9	26.2
14	Romania	16.3	24.0	24.9
15	Sweden	26.0	43.5	26.0
	Mean	**30.8**	**46.1**	**36.2**
	Minimum	**10.6**	**15.3**	**11.6**
	Maximum	**52.5**	**77.8**	**65.1**
	Standard Deviation	**14.5**	**19.4**	**15.7**
	OECD Average	**34.1**	**45.2**	**38.6**

- Digital Financial Literacy vs. Digital Service Use

The mean proportion of adults who meet the minimum digital financial literacy score across selected countries in Europe is 30.8%, while on average 46.1% of adults actively use online financial services. It suggests that a substantial part of the adult population is already engaging in digital financial activities without possessing adequate digital literacy, potentially exposing themselves to risks.

For instance, in Cyprus, only 10.6% of adults have sufficient digital financial literacy, yet 29% use online financial services. In Hungary, only 16.2% meet the literacy threshold, compared to the 29.7% who use digital financial services.

These discrepancies point to a significant digital literacy gap, whereby a large proportion of digital financial users lack the necessary skills and knowledge to manage those services safely and effectively.

This pattern is also observable in the OECD average. While only 34.1% of adults meet the minimum target level of digital financial literacy, 45.2% are managing their finances online.

- Adequate Digital Financial Literacy among Digital Financial Users

A more nuanced indicator is the percentage of digitally active adults who also meet the target digital financial literacy score. On average, only 36.2% of digital finance users reach this threshold, which is slightly below the OECD average of 38.6%.

For instance, in Germany, the alignment between usage and literacy is relatively strong, with 61.5% of users meeting the literacy benchmark. In Cyprus, this figure drops just to 11.6%,

meaning that nearly 90% of users operate with insufficient literacy, potentially placing them in a vulnerable position. In Hungary, only 22.4% of digital service users meet the literacy minimum.

These findings further support the hypothesis that the use of digital services has outpaced digital financial literacy. This could lead to digital financial exclusion, vulnerability to fraud, or misinformed decision-making.

Variability Across Countries

There is substantial cross-country variability in digital financial literacy and usage within Europe, as reflected in the standard deviation values. The standard deviation of the proportion of adults reaching the minimum digital financial literacy threshold is 14.5 percentage points, indicating notable differences across countries. This variability is even more pronounced in the case of digital finance service usage, with a standard deviation of 19.4 percentage points. Among individuals who use online financial products and services, the standard deviation of those achieving adequate digital financial literacy is 15.7 percentage points, further underscoring the uneven distribution of digital financial competencies across European populations.

A closer examination of the data reveals that countries with higher income levels and more advanced digital infrastructures—such as the Netherlands, Luxembourg, Germany, Finland, and France — tend to perform better in both digital finance usage and the alignment with digital financial literacy. In contrast, lower-income or less digitally developed countries, including Cyprus, Hungary and Romania, demonstrate larger gaps between the extent of digital finance service usage and the population's digital financial preparedness. An especially noteworthy case is Greece, where only 15.3% of adults use digital financial products and services. However, a relatively high share of these users (65.1%) meets the minimum digital financial literacy threshold. Furthermore, the overall proportion of adults achieving adequate digital financial literacy in Greece is 38.0%, which is above the sample average of 30.8%.

Correlation Analysis Between Digital Financial Literacy and Selected Socio-Demographic Factors

To explore the relationships between digital financial literacy and selected socio-demographic variables, a **Pearson correlation analysis** was conducted. The variables examined included Gender, Age, Educational attainment, Income level, and Size of settlement.

The *Pearson correlation coefficient (r)* was employed to measure the strength and direction of the linear relationship between variables, with values ranging from –1 (indicating a perfect negative correlation) to +1 (indicating a perfect positive correlation). Positive values imply that the variables increase together, while negative values imply an inverse relationship. Values close to zero imply a negligible or non-existent linear correlation.

To assess the statistical significance of the observed correlations, both *p-values* and *t-values* were calculated. The *p-value* represents the probability that the observed correlation occurred by chance. In line with conventional statistical standards, a p-value below 0.05 was considered statistically significant.

The *t-value* serves as a test statistic to evaluate the null hypothesis, which posits that no linear relationship exists between the variables ($r = 0$). The t-value is derived from both the sample size and the magnitude of the correlation. A *higher absolute t-value* indicates a stronger deviation from the null hypothesis, suggesting that the correlation is statistically meaningful. Conversely, a *lower t-value* implies insufficient evidence to reject the null hypothesis, indicating that the observed relationship may be the result of random variation within the sample.

In summary, while the *correlation coefficient (r)* quantifies the relationship between variables, the *t-value* and *p-value* jointly determine how reliable and generalizable the findings are in a broader population context.

The results of the Pearson correlation analysis are presented in Table 3 below.

Table 3: *Digital Financial Literacy and Selected Socio-Demographic Factors*
Source: *Author's calculations based on OECD INFE (2023) data*

No.	Factor	Pearson's r	Interpretation of r	Standard Error	t-value	Significance (p)	Significance Interpretation
1	Gender	-0.106	Very weak negative correlation	0.180	-0.563	0.578	Not statistically significant
2	Age	-0.081	Very weak negative correlation	0.162	-0.531	0.598	Not statistically significant
3	Educational attainment	0.579	Moderate to strong positive correlation	0.098	4.652	< 0.001	Statistically significant
4	Income level	0.479	Moderate positive correlation	0.109	3.583	< 0.001	Statistically significant
5	Size of settlement	0.222	Weak positive correlation	0.150	1.441	0.157	Not statistically significant

The analysis revealed statistically significant positive correlations between digital financial literacy and two variables: Educational attainment ($r = 0.579$, $p < 0.001$) and Income level ($r = 0.479$, $p < 0.001$). These findings indicate that individuals with higher levels of educational attainment and higher income tend to exhibit higher levels of digital financial literacy.

By contrast, the variables Gender ($r = -0.106$, $p = 0.578$), Age ($r = -0.081$, $p = 0.598$), and Size of settlement ($r = 0.222$, $p = 0.157$) did not show statistically significant correlations with digital financial literacy. Although the correlation between size of settlement and digital financial literacy was positive, it was not strong enough to reach the threshold for significance.

Overall, the findings suggest that Educational attainment and Income level are important predictors of digital financial literacy, while other demographic variables examined do not appear to play a significant role in this context.

Analysis of Variance (ANOVA)

To further investigate the observed relationships between digital financial literacy and certain socio-demographic variables, a One-Way Analysis of Variance (ANOVA) was conducted. The aim was to determine whether digital financial literacy scores differ significantly across five socio-demographic variables: Gender, Age, Educational attainment, Income level, and Size of settlement. The results of the ANOVA are summarized in Table 4.

Table 4: *ANOVA Results for the Relationship between Digital Financial Literacy and Socio-Demographic Variables*

Source: *Author's calculations based on OECD/INFE (2023) data*

ANOVA Table							
			Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Point * Gender	Between Groups	(Combined)	17.633	1	17.633	0.317	0.578
	Within Groups	With fewer than three groups, linearity measures for Point * Gender cannot be computed.	1558.533	28	55.662		
	Total		1576.167	29			
Point * Age	Between Groups	(Combined)	142.178	2	71.089	0.831	0.442
		Linearity	24.3	1	24.3	0.284	0.597
		Deviation from Linearity	117.878	1	117.878	1.379	0.247
	Within Groups		3591.067	42	85.502		
	Total		3733.244	44			
Point * Education	Between Groups	(Combined)	1274.133	2	637.067	10.82	<,001
		Linearity	1254.533	1	1254.533	21.31	<,001
		Deviation from Linearity	19.6	1	19.6	0.333	0.567
	Within Groups		2473.067	42	58,883		
	Total		3747.2	44			
Point * Income	Between Groups	(Combined)	716.933	2	358.467	6.342	0.004
		Linearity	710.533	1	710.533	12.57	<.001
		Deviation from Linearity	6.4	1	6.4	0.113	0.738
	Within Groups		2373.867	42	56.521		
	Total		3090.8	44			
Point * Settlement	Between Groups	(Combined)	108.333	2	54.167	1.015	0.372
		Linearity	108.036	1	108.036	2.024	0.163
		Deviation from Linearity	0.298	1	0.298	0.006	0.941
	Within Groups		2081.286	39	53.366		
	Total		2189.619	41			

Note:

- *Sum of Squares* reflects the variability between and within groups.
- *df* (degrees of freedom) indicates the number of independent values that can vary.
- *Mean Square* is calculated by dividing the sum of squares by the corresponding degrees of freedom.
- *F* is the test statistic used to determine whether group means are significantly different.
- *Sig.* (p-value) indicates the significance level of the test. A p-value below 0.05 denotes statistical significance.

The ANOVA analysis revealed both statistically *significant* and *non-significant* differences in digital financial literacy scores and the socio-demographic variables.

Statistically significant differences were identified in digital financial literacy scores based on participants' Educational attainment and Income level.

- Educational attainment: The ANOVA revealed a significant effect of educational attainment on digital financial literacy scores ($F(3, N) = 10.819$, $p < 0.001$), with post hoc comparisons indicating variation across the different educational categories. Furthermore, a significant linear trend was observed ($F = 21.306$, $p < 0.001$), suggesting that higher levels of education are systematically associated with increased digital financial literacy.
- Income level**:** A similar pattern emerged for income, with a statistically significant effect ($F = 6.342$, $p = 0.004$). A strong linear trend was present ($F = 12.571$, $p < 0.001$), indicating that higher income levels correspond with higher digital financial literacy scores.

Conversely, no statistically significant differences in digital financial literacy scores were found with respect to Gender, Age and Size of settlement:

- Gender**:** $F = 0.317$, $p = 0.578$
- Age**:** $F = 0.831$, $p = 0.442$
- Size of settlement: $F = 1.015$, $p = 0.372$

These findings suggest that, within this sample, Educational attainment and Income level are key socio-demographic factors influencing digital financial literacy. In contrast, Gender, Age, or Size of settlement do not appear to have a statistically significant impact on the outcome variable.

- Measures of Association

The strength of **association between digital financial literacy scores and the categorical socio-demographic variables** was further examined using *Eta* and *Eta-squared* coefficients, as shown in Table 5, including *R and R-squared*.

Eta values indicate the magnitude of the relationship, while Eta-squared represents the proportion of variance in the metric variable (digital financial literacy scores) that can be explained by the categorical grouping variables. Values closer to 1 indicate stronger effects. R and R-squared are also reported to reflect the strength and explanatory power of linear relationships between variables.

Table 5: *Measures of Association (Eta) Indicates*
Source: *Author's calculations using OECD/INE (2023) data*

	R	R Squared	Eta	Eta Squared
Point * Gender	0.106	0.011		
Score * Age	0.081	0.007	0.195	0.038
Point * Education	0.579	0.335	0.583	0.340
Point * Income	0.479	0.230	0.482	0.232

Point * Settlement	0.222	0.049	0.222	0.049

The analysis revealed moderate associations between digital financial literacy and both Educational attainment (Eta = 0.583) and Income level (Eta = 0.482). The corresponding Eta-squared values — which measure explanatory power — were 0.340 and 0.232, respectively. These results suggest that approximately 34% of the variance in digital financial literacy scores can be explained by Educational attainment, and **23%** by Income level. While these values do not indicate strong associations, they approach moderate strength, highlighting the relevance of these two variables in shaping digital financial literacy. In contrast, the remaining variables (Gender, Age, and Size of settlement) showed weak associations, with Eta-squared values below 0.05, indicating limited explanatory power.

To further examine the linear relationships between digital financial literacy scores and the socio-demographic variables R and R-squared values were used. Among the variables analyzed, Educational attainment showed the strongest linear association with digital financial literacy (R = 0.579), accounting for approximately 33.5% of the variance in scores ($R^2 = 0.335$). Income level also demonstrated a moderate linear relationship (R = 0.479; $R^2 = 0.230$), indicating that higher income levels are associated with higher literacy scores. In contrast, the linear associations between digital financial literacy and Gender, Age, and Size of settlement were weak or negligible, with R^2 values below 0.05, indicating minimal explanatory power.

These findings reinforce the conclusion that Educational attainment and Income level are the most influential socio-demographic factors in explaining variations in digital financial literacy.

Overall, the results provide partial support for Hypothesis 2 (H2), which posits that digital financial literacy is significantly influenced by key socio-demographic factors in the selected European countries. Specifically, the statistical analyses support sub-hypotheses **H2c** and **H2d**, whereas H2b, and H2e are not confirmed.

Conclusions

The statistical analysis of digital financial literacy among adults in 15 European countries reveals several key findings.

The overall level of digital financial literacy among adults in the examined European countries is relatively low and can be considered insufficient.

Of the socio-demographic variables studied, Educational attainment and Income level emerged as significant predictors of digital financial literacy. At the same time, Gender, Age, and Size of settlement showed no statistically significant influence.

Considering these findings, Hypothesis H1 was supported, confirming that digital financial literacy is insufficient and not uniformly distributed across the adult population in the 15 European countries. However, Hypothesis H2 was only partially supported, as not all the socio-demographic factors examined showed a significant effect.

Given the scope and methodology of the referenced survey — which employed a standardized and internationally validated approach with representative samples of at least 1,000 respondents per country — the results can be considered robust. Therefore, the conclusions drawn from this analysis may be reasonably generalized to the broader adult populations of the 15 European countries.

Prospects for Further Research

Several avenues may be pursued in future research. First, the scope of the analysis could be expanded both temporally and geographically. Comparing the current findings with those of earlier surveys could provide valuable insights into long-term trends. Additionally, expanding the sample to include more countries — or potentially all OECD member states — would enhance the comprehensiveness of the study. Moreover, future studies could examine the relationship between digital financial literacy and broader socio-economic indicators such as GDP per capita and internet penetration. Finally, collecting and evaluating initiatives aimed at improving digital financial literacy, identifying best practices, and formulating policy recommendations would significantly enhance the practical relevance and impact of the research.

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